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United States Department of Agriculture
Bureau of Markets

SEED REPORTER

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SPECIAL ANNOUNCEMENT.

The Seed Reporter has been published by the Seed Reporting Service of the Bureau of Markets as an emergency activity during the war. The regular agricultural appropriation bill for the fiscal year 1919-1920 includes an item for the continuance of the Seed Reporting Service as a regular activity of the Bureau. However, as the allotment for this service for the next year is very much less than for the preceding year, it is necessary that the service be reorganized. Therefore, it is desirable at this time to have expressions of opinion as to the value of the work performed by the service, and particularly of the various kinds of information published in the Seed Reporter. No authorization has been given yet, however, for the continuance of the publication of the Seed Reporter.

Inasmuch as the Seed Reporter has been issued for a sufficient length of time for the public to have an opportunity to determine its usefulness, it is our desire in the reorganization of the service to consult with the public and to conform our policies in so far as possible to its desires.

In order to obtain this information an inquiry is being sent to those who are on the mailing list to receive the Seed Reporter regularly. It is hoped by this means to obtain information and suggestions that will be of great value in the reorganization of the service.

MR. BRAND RESIGNS AS CHIEF OF THE BUREAU OF MARKETS.

The resignation of Charles J. Brand, as Chief of the Bureau of Markets, took effect on June 30, 1919. He has accepted a position as vice president and general manager of a commercial concern, with headquarters at Pittsburgh. George Livingston, a member of the Bureau staff, has been designated to act as Chief of the Bureau until Mr. Brand's successor is appointed.

SOME FACTORS THAT MAY AFFECT THE RED CLOVER SEED CROP.

A. J. Pieters, Bureau of Plant Industry.

While it is too early to make any definite statement in regard to the probable crop of red clover seed, it may be worth while to call attention to some factors that may affect the total production of this seed. The red clover seed crop of one year is almost always taken from the seeding of the previous year. The acreage to be cut for seed depends partly on how the fields have survived the winter and partly on the weather conditions during the summer of the year the seed was sown. The past winter was mild and consequently very little of the clover was winterkilled. Last summer, however, was dry and while no exact figures are available, it is known that many fields were lost because of the drouth. A study was made in the Bureau of Plant Industry of the rainfall records in the clover-seed producing counties of Ohio, Indiana, Michigan, Wisconsin, Illinois, Minnesota, and Iowa for June, July, and August, 1918. These three months are critical for young red clover plants because during June the plants are competing with the grain crop for moisture and during July and August they are still small and are exposed to the hot rays of the sun after the grain crop is harvested. The total rainfall for the year may be normal or above normal but be of little avail to the red clover plants if the rainfall is seriously deficient during the months of June, July, and August. If the drouth has not been too marked during these months, copious rains in September may revive the injured plants.

The rainfall records show that in Michigan the entire clover-seed producing section from Newaygo and Midland counties south suffered severely during June, July, and August of last year. There were isolated spots showing a fair rainfall, but generally this section had only from 75 per cent to 25 per cent or less of a normal rainfall. In the northwest counties of Ohio, where most of the red clover seed is produced in that State, only 33 to 75 per cent of a normal rainfall was obtained. About the same condition obtained in northern and central Indiana. Illinois fared better, only small isolated districts being dry during these months. In Minnesota and Wisconsin the rainfall was very light. In some counties of Wisconsin, among them Ozaukee, Sheboygan, and Dodge, there was almost no rain in July, following a June during which the precipitation was about one-half of normal. In Iowa the rainfall was excessive during June but in July the southwestern part of the State suffered severely. The summer of 1918 was dry also in Oregon. The plowing up of a considerable acreage of clover in Idaho this spring seems to have been due to certain diseases that lately have made their appearance and to the increase in acreage of small grains rather than to lack of moisture last summer, as elsewhere.

It is apparent from the rainfall data that the drouth during June, July, and August, 1918, in the most important red clover-seed producing sections will have an appreciable effect upon much of the acreage that would have been harvested this year for seed. This may be offset by several factors, which must be taken into consideration in determining whether the net effect of all the factors will result in the harvesting of a normal acreage this fall. Reports of the Bureau of Crop Estimates show that in 1918 the acreage from which seed was harvested in sixteen States was but little more than one per cent of the total clover acreage of those States, as reported in the spring of that year. In the eight most important clover-seed States it was a trifle less than 1.7 per cent. It is therefore quite possible, even if the total clover acreage this spring in the important seed-producing sections was extremely small, that a fair to normal acreage may, nevertheless, be cut for seed.

One important determining factor will be the relation between the price for hay and that for seed. Hay is scarce and high and with a clover acreage decreased because of last season's drouth there may be less hay with consequent continuing high prices. This will cause much second-crop to be cut for hay. Large acreages of millet and other emergency hay crops have been put in but it is not known just how these will affect the total hay crop. The tendency to let the first crop of clover stand rather late in order to get the most hay will also have some indirect bearing since it will result in more clover-flower midge. The Department of Agriculture has been urging farmers to cut hay early so as to destroy the first crop of midge, but it is too early to know how much effect this has had.

PARTIAL REPORT OF SEED SURVEYS TO BE MADE IN AUGUST.

It is contemplated that a report on the first fifteen items of section 3 of the general seed survey schedule of June 30, which includes the grasses and clovers, will be made in August. A report probably will be made at the same time on the vegetable seed acreage survey of June 30. In order that these reports may be as complete as possible, it is requested that all those concerns who have not returned the schedules properly filled out in either or both surveys do so immediately.

CRITICAL STUDIES IN SEED PRODUCTION

Paper prepared by Mr. R. A. Oakley, of Forage Crop Investigations, Bureau of Plant Industry, and read before the Annual Convention of the American Seed Trade Association, at Chicago, June 24-26, 1919.

The war through which we have just passed found us lacking much important information regarding seeds that we really should have had. Emergencies seem to have the habit of catching us short in many lines, and I suppose they will always find us unprepared in some respects. However, the subject I desire to outline to you at this time does not constitute a necessity that was born of war conditions.

The need for the studies I am thinking of antedates the war, and is with us now that war has ceased. I refer to the need for critical studies in seed production. Of course, I know relatively few of you are actual seed growers, but all of you have an active interest in the enterprise. I should perhaps use a more comprehensive term than "critical" to define the type of studies I think should be conducted, since some could only be called critical by placing a broad construction on the scope and meaning of the word. The studies I have particularly in mind are in part biological, or those relating directly to the organization and life of the plant; they are part physical, or those relating to soil and climate; and they are in part cultural, since they include planting, cultivation and harvesting.

It may be argued that such investigations are now under way and have been in progress from time out of mind. That is true, but the need is for conducting these investigations on a systematic and very specific basis. What has been done for the most part might be characterized as fragmentary since the efforts back of the results have in a large measure been lacking in coordination, and the methods employed have been sadly wanting in definiteness and accuracy. The knowledge we have gained is of an empirical nature, mixed I am sorry to say with much fallacy and even prejudice. Seed is too important an item in our nation's welfare to be slighted in the study of its production, especially now when we are about to venture upon a new economic era.

In brief, we need to conduct critical investigations to stabilize our commercial seed production enterprise and put it upon a really sound basis. I do not mean to infer that seed growers are lacking in intelligence or that the enterprise is a slip-shod one. On the contrary, the commercial seed grower is a very high type of producer and the enterprise itself is for the most part highly specialized. But there is much fog that must be cleared away, and many problems that must be solved before we can hope for advancement in seed production such as is now taking place in other lines of scientific agriculture. Stabilizing production may or may not mean increasing production, but it does mean improving it, and in some very important cases, relieving to as large a degree as possible the uncertainties that attend it. The placing of the enterprise on a really sound basis involves this and more. It involves the elimination of erroneous notions regarding the soil and climatic relations of plants, of their acclimatization, of plant breeding, and the deterioration of stocks, and of many fallacies relating to other features.

By way of illustration I might give a few examples of the studies that are in need of prosecution. In the field which involves stabilizing and improving production, there are two large problems which in my opinion stand out clearly from all others in their importance to the country. These problems relate to the setting of seed in red clover and alfalfa. Those of you who are familiar with these important crop plants will agree with me, I am sure, in this statement. Seed setting in red clover and alfalfa is uncertain almost to the point of weirdness. The alfalfa seed crop is particularly precarious, and I regret to say that the problems relating to the setting of alfalfa seed so far have almost completely baffled investigators.

It is estimated that our annual requirements of red clover are upward of 110,000,000 pounds, and we can never be sure of being able to meet our own needs with home-grown seed. Investigators have looked into some of the fundamental factors underlying red clover seed production and they are convinced that critical, biological, and physical studies are essential before a solution of the seed setting problem can be hoped for.

A good deal of critical study has been given to the red clover flower and to what we might call the mechanism of seed setting. The mechanism of the flower is a delicate one and it is very susceptible to the influence of climatic factors. We know that the pollen grain of red clover is rather exacting in its requirements of conditions for germination, and we also know that the fertilization of the ovule by the pollen grain is likewise a very delicate life process. Attention has been given to the subject of fertilization and pollination, but we have not as yet learned much that helps us in accomplishing seed setting on a practical scale. Instead of resulting in discouragement, however, the studies which have been conducted offer hope of ultimate success, and the lines of investigation that have been pointed out by the preliminary work of the past should be followed with critical attention.

New sources of production, it is true, are adding to our red clover seed supply, but it is improbable that these will be sufficiently extensive to solve the question of supply for us.

We have a much more difficult case in alfalfa, and one that deserves all the attention that we can give it. I can speak with considerable feeling in this particular case since I have been actively interested for several years in studying factors that influence seed setting, and I think I can appreciate how much there is to learn and what it would mean to this country if we understood and could favorably control the determining factors.

We have good evidence that strains of alfalfa develop as the result of several seed generations in a definite locality or under a given set of conditions. We do not know how many seed generations are required to produce local strains, but we know that such strains exist and that they are especially valuable in the localities where they develop. Think of the headway we would make with alfalfa in the eastern States if we could produce local strains adapted to the conditions of soil and climate that exist there, but unfortunately alfalfa is a shy seeder under humid conditions and consequently very little seed is produced east of the 95th meridian. A few years ago we thought we had solved the problem, at least for the West, by the wide-row method of culture, but when the method was put to the test we found to our disappointment that it was far from being a panacea for seed production ills.

We have studied the relation of the tripping of the flower to seed setting. We once thought the setting of seed was directly correlated with insect visitation, but we found upon investigation that at least one of our best seed-producing sections has few insects that trip the flowers and we therefore had to abandon this lead.

We have tried the effect of controlling soil moisture, and I might add that we are still trying it, but we have accomplished nothing notable in this direction. We have followed many lines to failure, or partial failure, but the field of investigation is still a large one and our studies, should be prosecuted even more vigorously than they are now prosecuted, or than they have been in the past, for they will surely lead to a measure of success.

There is much to be done in the way of finding new sections for seed production. This is perhaps more of the nature of reducing uncertainties of supply than increasing production, although in the case of the two forage crop seeds heretofore mentioned we could stand a substantial increase in supply.

There are some vegetable seeds that we get from abroad that should be grown here in more abundance, notably seed of certain varieties of onion, cabbage, and cauliflower. Seed of the bent grasses constitute another specific example. These grasses are among our best fine turf grasses and are particularly desirable for golf courses. The war stopped our importation of creeping bent seed from Germany, and about the only available source of seed of similar character was the New England States. Some effort has been made to develop the supply of Rhode Island bent seed in New England, but there is a great deal that must be done before the demands for fine bent seed will be met.

Cultural methods, including methods of harvesting and curing, constitute a large and important field for investigation. By cultural methods, we modify soil conditions and to a limited extent also the effect of climate. The influence of cultivation on plants is sometimes very marked and has much to do with the yield and quality of seed. This is especially true of vegetables, and I am confident that our commercial vegetable seed growers appreciate the opportunities for accomplishment in the field of cultural investigations. It has always seemed to me that a little critical study would produce very profitable returns in the growing of seed of biennial vegetables. Our methods now involve much time and relatively large expense. Whether it would be possible to shorten the time required for producing seed of beets, carrots, parsnips, and similar vegetables, I do not know, but I feel reasonably sure that methods could be evolved that would materially lessen the cost.

Harvesting and curing have a very direct effect on the quality of seed, and in many cases on the net yield. For

example, most of us, I think, feel that there is much chance for improving Kentucky bluegrass seed by improved methods of harvesting and curing, and there are any other cases comparable to it.

The specific problems in acclimatization are almost without number in vegetable-seed production, and they are also plentiful in field seed production. It is here that numerous fallacies relative to acclimatization, to the deterioration of planting stocks, and other phases of seed growing are to be found. There are certain fallacies and traditional errors that have been handed down from generation to generation, which constitute a real impediment in the way of progress; certainly in the way of the progress that is necessary to place the production of many of our important seeds on a really sound basis. These fallacies cause a large financial loss to our seed growers and to the public, and it is only by obtaining facts and being able to present the unmistakable truth that we can hope to dispose of them. Prejudice opposed to certain kinds of domestic-grown seeds has been a larger factor than the economic ones in making us dependent upon foreign sources of supply. Opinion based on hearsay or observation is not sufficient. We need the truth, and only critical experimentation can provide it for us.

I might continue with this argument indefinitely, but I trust I have given you a clue to what I have in mind. You will recall I have not indicated how seed production studies should be undertaken or what agency or agencies should conduct them. Individual effort can accomplish much, but some of our largest and most important problems will require years of time and large outlays of money to effect their solution, and we cannot expect individuals to undertake them. It is, I think, apparent to all that we must have the help of specially equipped investigational agencies in some of the more important and critical studies. Besides, there must be cooperation and the proper coordination of activities. The important consideration now is action. Without critical experimentation some of our most vital seed production problems will go unsolved for generations, and we cannot afford delay.

HAIRY VETCH SEED OUTLOOK

A larger acreage of hairy vetch seed is expected to be harvested along with the greatly increased acreage of rye in Michigan. According to the forecast of the Bureau of Crop Estimates from the condition of the 1919 rye crop, the acreage of rye in Michigan this year is estimated to be 9,360,000 acres as compared with 6,750,000 acres last year. The fact that hairy vetch seed has been selling at a good price has induced many growers to increase their sowings of this seed. The yield per acre is expected to be larger than that of last year because little or none of it winterkilled. Apparently no bids have been made for the new-crop seed, which is expected to move in August and September.

IMPORTS OF FORAGE PLANT SEEDS PERMITTED ENTRY INTO THE UNITED STATES.

Under the Seed Importation Act.

Compiled by the Seed Laboratory of the Bureau of Plant Industry, United States Department of Agriculture.

Kind of Seed.	Month of June.		Fiscal year ending June 30,			
	1919	1918	1919	1918	1917	1916
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
Alfalfa	506,800	600	770,400	44,700	3,169,600	3,251,796
Bluegrass:						
Canada	187,800	30,600	738,700	1,229,000	495,300	698,300
Kentucky	.....	.....	.....	4,500	.....	1,300
Brome grass, awnless	.....	.....	.....	.....	1,400	315
Clover:						
Alsike	29,400	87,400	7,031,800	3,528,200	4,329,000	1,113,464
Crimson	800,900	40,000	1,483,500	1,603,000	5,776,300	4,503,983
Red	88,100	155,700	1,050,900	768,300	5,343,600	32,508,537
White	.....	.....	700	52,700	157,800	148,768
Clover mixtures:						
White and Alsike	.....	.....	96,100	30,200	16,100	.....
Red and Alsike	.....	.....	900	.....	.....	.....
Alsike and Timothy	.....	.....	453,100	138,800	7,800	.....
Timothy, Alsike and White	.....	.....	.....	.....	1,600	.....
Alfalfa and Red	.....	.....	.....	.....	100	.....
Millet:						
Broom-corn	.....	833,700	.....	1,583,700	786,400	1,101,556
Hungarian	.....	.....	138,300	9,000	259,500	117,759
Mixtures:						
Grass	.....	.....	200	5,600	123,600	.....
Spring Vetch and Oats	.....	.....	.....	.....	300	.....
Orchard Grass	22,500	.....	177,200	57,600	1,286,300	754,476
Rape	.....	120,500	639,000	11,316,300	2,285,700	4,018,908
Redtop	.....	.....	5,000	2,200	1,000	.....
Ryegrass:						
English	22,200	20,400	831,200	1,583,500	1,007,900	1,510,440
Italian	56,000	18,700	207,800	606,000	480,700	382,841
Timothy	.....	.....	154,600	22,400	4,400	118,737
Vetch:						
Hairy	3,000	12,100	256,500	231,200	295,600	67,683
Spring	.....	.....	435,200	117,600	29,900	61,613

ORCHARD GRASS SEED OUTLOOK.

The outlook for the orchard grass seed crop about July 1 seemed to indicate that a production in the United States nearly equal to that of last year would be obtained this year. The summaries of the reports received for the two important orchard grass seed production areas are given herewith:

Kentucky, Indiana, and Ohio.—In the June issue of the Seed Reporter the outlook of the orchard grass seed crop the latter part of May in Kentucky, Indiana, and Ohio was given. It was stated that the acreage this year in those States probably would not exceed 90 per cent of last year's acreage, and that the yield per acre would be somewhat less than that of last year. It is believed that the production of orchard grass seed this year in the principal producing sections of these States may be somewhat less than that of last year, when it was estimated that about 250,000 bushels were produced. The decreased production in these States may be offset in part, at least, by the probable increased production this year in Virginia.

Harvesting of the crop was delayed about two weeks on account of rain, and was just commencing during the first few days of July instead of in the middle of June, as usual. It is not known as yet what effect the belated harvesting will have on the yield and quality of the seed, but it is thought that they might be seriously affected if more rain should fall while the seed is in the shocks. There is very little intimation of what growers will receive for their seed this season, but it is reported that New Zealand seed is being offered at $21 to $23 per 100 pounds, f. o. b. New York.

Virginia (Fauquier County).—Practically all of the correspondents stated that a larger acreage of orchard grass in Fauquier County, Virginia, would be cut for seed this year than was cut last year, the increase being estimated to be about 25 per cent. Reasons given for this increase were that the thick stand of seed induced more growers to harvest their fields for seed purposes, and that not so large an acreage of orchard grass had to be reserved for grazing and hay purposes because of the excellent growth that pastures and meadows had made during the spring. Growers began to cut their crop for seed on June 15-20. The yield per acre is expected to be at least 25 per cent larger than that of last year because the plants were thicker on the ground and contained more seed. The quality of the seed is good, being well-matured and plump. Some growers reported that weeds gave them more trouble than usual this season, consequently some of the orchard grass seed may contain a higher percentage of weed seed than normally, but that this will be offset by the good quality of the orchard grass seed. No bids have been made to growers for their seed, and no expressions of opinion were received as to the probable price at which the crop would move from growers' to dealers' hands. Considerable variation in the estimates of the number of bushels of orchard grass seed ordinarily produced in Fauquier County were received, but it is thought from the data submitted that the production this year would be about 40,000 bushels.

REDTOP SEED OUTLOOK

The outlook for redtop seed in southern Illinois, where most of this kind of seed is produced, is good. Though it is estimated by those reporting that the acreage which will be cut for seed this year will be about 10 per cent less than that of last year, the yield per acre is expected to be somewhat better this year. Plenty of moisture and almost ideal weather conditions have induced an excellent, thick growth and the flower stalks are of good length and are numerous. In some of the older fields weeds will be troublesome. Most of the meadows, however, that were affected severely by the dry weather of last year and in which the weeds had an opportunity to gain control, were plowed up, which of course has reduced the acreage somewhat. It is expected that harvesting will begin in the most important redtop-seed producing counties about July 15, though in some counties it was reported that harvesting would start as early as July 10. In others it will be deferred until about August 1. Though it is too early to determine with any degree of certainty what the quality of the seed will be, it is believed that it will be good. Rainy weather at harvest and between that time and threshing may affect the quality of the seed so far as color is concerned. No price for the new crop, which is not expected on the market until early fall after the threshing of wheat, rye, and oats has been completed, has been established but some dealers are reported as making bids of 8 to 12 cents per pound for recleaned or "silver" seed.

SOME ASPECTS OF SEED CONTROL

Paper read by W. A. Wheeler, in Charge Seed Reporting Service, Bureau of Markets, before the Annual Convention of the Wholesale Grass Seed Dealers' Association at Chicago, June 23, 1919.

In considering the subject of seed control in any of its phases, it is most desirable to hold in mind the legitimate functions of the various branches of the seed business, and to recognize that every assistance possible should be rendered seedsmen in the performing of these functions in order that they may render the greatest possible service to the agencies which they serve. Seed legislation has ordinarily been looked upon as a protection to the consumer against unscrupulous methods of unreliable or dishonest seedsmen. Much of the legislation that has been proposed has been approached from this angle, and has been drastic in its provision. It has been destructive in many ways instead of constructive. Because of this characteristic of early seed legislation, the seed trade in the past has generally assumed an antagonistic attitude toward seed legislation. Through the efforts and influence of a large number of the better class of seedsmen in recent years, this attitude is gradually changing from one of strict opposition to all legislation, to one of tolerance of the more reasonable legislation and in many cases even to the extent of a full cooperation with State agencies interested in the proper regulation and handling of the seed business. As the seed trade is an institution which is necessary in the conduct of our agricultural operations instead of a parasite on our rural institutions, it is very desirable that any legislation or control that is ever proposed should recognize all of the facts which enter into the conduct of the seed business, as well as the necessary protection of the purchaser of seed.

Seed legislation has certain objects in view, some of which are the following: (a) To protect the purchaser against misrepresentation regarding the seeds purchased. (b) To prevent the distribution and spread of noxious weeds through the sale of agricultural seeds containing noxious weed seeds. (c) To stimulate the sale and use of strictly high-grade seeds. (d) To provide systems of merchandising that will assure protection to the purchaser without incurring unreasonable or injurious hardships on the dealer. (e) To assure the reliable seedsman who is doing a strictly legitimate seed business the necessary protection from the acts of the unscrupulous dealer. (f) To provide for the adoption of standards of nomenclature and terminology in order to obtain simplicity and accuracy in seed merchandising. The legislation in the past has in most cases attempted to cover the first three of these purposes, but has ignored to a large extent the last three, or whenever an attempt has been made to protect properly the seedsman in his business, this has been obtained by sacrificing in a measure the protection given to the customer.

It appears to me that the legislation of the future should be the product of a thorough cooperation between buyer, seller, and the various agencies which are working for the good of American agriculture. If this is not to be the case, then we are falling short of what should be the aim of the entire seed business. The seed business as a whole is too great a factor in the success of our agriculture to be played with or manipulated by purely selfish commercial interests, and it is gratifying to note the present tendency towards improvement in policies and methods in the seed business. The constructive legislation in the future will deal largely with the last three objects mentioned above. A proper emphasis upon these three kinds of legislation in securing uniformity throughout the seed trade, will I think do more than anything else to accomplish the protection of both buyer and seller without hazarding the interests of either. This may be setting a high aim, but is the only logical one that we should work for. Until that end is reached, or until the right attitude is taken by all interests to reach that end, there will be a conflict of interests in the handling of the seed business.

The past and present methods of sced merchandising and lack of control or regulation to secure uniformity in such methods have made it scem necessary to the seed trade to adopt a protective device which is known as the "Seedsmen's Disclaimer." The stated and implied object of this disclaimer has been to protect the seedsman from matters in connection with the sale of seeds over which he has no control. It is always assumed without question in the commercial world that an individual or concern is responsible for its acts or the acts of its employes in all matters over which it has control. The use of the disclaimer in the conduct of a legitimate seed business probably has been wholly proper and necessary for the protection of that business. It, however, has been used in many cases as a cloak for the protection of unreliable dealers. This latter can not be questioned. Proper legislation with a view to protecting the seedsman as well as the consumer of seeds will make obsolete the disclaimer in its present form. It may be that some points in the disclaimer, such as guaranteeing productiveness, or assuming responsibility for the crop, may always continue to be appropriate. But the nonwarranty with reference to description, or quality, or purity, will necessarily become obsolete under constructive legislation. Some of the best seedsmen today recognize that the phrasing, use, and abuse of the disclaimer have been factors in the encouraging of noxious class legislation against seedsmen. I am not assuming that the disclaimer has not served a purpose, and has not perhaps been necessary in the ordinary conduct of business in the past. As a matter of fact, most agencies that buy and sell seeds, whether they be private or governmental, have used some form of disclaimer in the sale of seeds.

When one recognizes the vast agricultural production of the country that is governed very largely by the character and quality of the seeds that are used in such production, he will understand the necessity of giving all possible protection to the planter. If it is absolutely impossible under the present systems of merchandising for the dealer to assume responsibility for the seeds which he sells, then it becomes necessary to devise ways and means of changing such systems of merchandising and bringing about a condition which makes it possible for the purchaser of seeds to know exactly what he is buying. Until we reach that end we have fallen short of our aim. I should consider myself derelict if this were not my aim in investigating methods of seed marketing, and I shall certainly do everything in my power to bring about conditions either directly or through legislation which will accomplish this end, and in doing so I expect the hearty cooperation of the best representatives in the seed trade.

Possibly I am unnecessarily obscure in mentioning these things in the abstract. Let us consider specifically one phase of constructive legislation that might tend to correct present practices and bring greater protection to the seed customer without forcing the dealer to assume responsibility for things presumably beyond his control. If uniform stock records were required of all seedsmen showing certain facts regarding all stocks of seeds handled by them, thus assuring their identity as to source and disposition of such seeds, it would be a simple matter always to trace responsibility for errors which are the result of carelessness. This would construct a chain of evidence at all times covering the actual source or origin of all seed, and I do not believe that we will ever be able to place the responsibility as to the knowledge of these things until uniform records of field seeds are required. It is true that such records would incur more work, perhaps, than some of the present methods of certain seedsmen, but that is no argument against them unless some better and more economical method can be found of providing for accurate knowledge regarding all seeds that are sold. The one who purchases seeds is entitled to that knowledge. I do not mean that all items of information as to source, time and place of production should be given to the purchaser. Some of these matters are trade information which is not necessary for the protection of the purchaser, but in so far as that information should be available in the seller's record whether given to the purchaser or not, it should be kept and preserved for reference.

Uniformity in the matter of stock records though, of course, presupposing that systems would vary in the details to suit the varying nature of various kinds of seed business, and provision for the inspection of such records, I think will be one of the strongest guarantees to the purchaser as to the reliability of seeds purchased. Such regulation would place the proper share of responsibility with each seedsman regarding the source, origin, description, and quality of the stock handled by him. In accepting a shipment of seeds from another seedsman with the accompanying required statement of facts, his responsibility would include only those factors which covered the handling of the information passed on to him, and facts regarding the seed which can be determined by observation or his own investigation.

In considering all of these matters as they relate to the seed business, one can not help but recognize that the future holds the greatest possibilities in store for the progressive seedsman. The seed business has made great strides in the past, developing from practically nothing, little more than a century ago up to a very important and necessary business. The future holds much greater opportunities in store for the seedsman than any period of the past. If the seed

business is to come into its own, it is going to demand the attention of men specially qualified and educated to conduct that business. The seed business of the present has reached its present degree of progress through the activities of men, most of whom have drifted into the seed business from some other commercial activity, or as a side line of the grain business, hardware business, grocery business, or some other similar line of merchandising. I do not wish to take one iota from the credit due to the men who have built up the seed business, even though they have come from these other lines, but I simply wish to emphasize that the seed business of the future will demand the very best talent that is available for the conducting of such business. I feel that the field is sufficiently large and attractive to invite young men to qualify themselves particularly for this business. I do not mean to suggest an agricultural training solely, but a combination of agricultural and commercial training, which will fit a man to solve the complex problems which seedsmen are regularly called upon to meet. The legislation of the future will develop business opportunities, and the next 25 years probably will show a much greater progress in the development of the seed business and the regulation of the business than any 25 years of the past.

SOURCES OF FIELD SEED FOR PLANTING

Considerable interest always has been manifested in information relative to sources from which farmers obtain the seed used directly by them for planting. It is obvious that it would be practically impossible to obtain accurate figures, and that the best data obtainable would be the opinions of the best informed persons throughout all sections of the country which use field seeds. In order that this information might be compiled in the best possible form, an extensive inquiry has been made throughout the United States to ascertain the estimated percentage of seed planted in each county which is normally (1) produced on farm where used, (2) obtained directly from other farmers, and (3) obtained from dealers.

The factors which affect the source of the farmer's seed supply for planting are many and various. Some of them are of a general character, and are readily recognized as affecting the percentages given in the accompanying table, others are of a more local character and are variable even in nearby counties. Some of the factors which may be mentioned, among others, as affecting the source of seed for planting of each particular crop are (1) total local production of seed of such crop within the county, (2) if not produced in quantity locally whether produced in nearby counties or only at distant points, (3) if produced extensively within the county, whether produced to some extent on nearly all farms, or only to a considerable extent on a few farms, (4) whether crop is one largely handled by seed dealers, (5) necessity for special equipment for cleaning or preparing seed for planting, (6) relative necessity for locally adapted varieties, (7) the existence of local agencies for buying and marketing seed, (8) the presence of local seed dealers, (9) the nationality of farmers within a community and their national habits relative to obtaining seed for planting, (10) special local traits or habits of farmers.

A study of this table of percentages will reveal many cases where the differences are readily understood as being the result of factors generally known. In other cases they are not easily understood, but it is probable that if all factors were known and could be analyzed carefully their effect on the figures would be shown clearly in each case. A few examples may be cited: In the North Central Division the effect of total State production in the two adjacent States of Minnesota and Wisconsin is shown by the figures. Minnesota is by far the larger-producing State of grass seeds, while Wisconsin produces much more clover seed. Therefore, Wisconsin farmers produce a higher percentage of clover seed on the farms where it is used, and Minnesota produces a much higher percentage of grass seed on the farms where used. The important factors in these two States relative to small grains as well as in the other two States of this division are very much the same, and the percentages shown here are very similar. Another instance of the influence of local production is shown in two other States adjacent to each other, Idaho and Washington. Idaho is a large producer of grass seeds, while Washington is a very small producer. It is shown here that farmers of Idaho produce a higher percentage of grass seed on the farms and obtain considerable from other farms, while the farmers in Washington obtain practically all of their grass seed through dealers. In the matter of small grains, the factors affecting the sources of supply in these two States are not dissimilar, and it will be seen that the percentages are practically the same.

The inquiry made by the Bureau of Markets covered small grains, grasses, clovers, beans, peas, millets, grain sorghums, forage sorghums, seed corn, cotton seed, potatoes, and peanuts. The information was requested on a basis of percentage of total seed planted in the county. It is planned that the complete published reports shall include not only percentages of each of the three sources of seed supply for each State, but also, so far as possible, the approximate quantities of seed covered by such percentages of the total quantity of seeds used. As this inquiry has been made very recently, it is impossible at this time to publish a complete report.

The following table gives merely the percentages for each State on grasses, clovers and alfalfa, and small grain for eight of the ten geographical divisions of the United States. The data for the Southwestern and Rocky Mountain Divisions are too incomplete to publish at this time.

Table Showing in Percentages for Grasses, Clovers and Alfalfa, and Small Grains, the Sources of the Farmers' Seed Supply in the Different States.

Division and State.	Grasses.			Clovers and Alfalfa.			Small Grains.		
	Produced on farm where used.	Obtained directly from other farmers.	Obtained from dealers.	Produced on farm where used.	Obtained directly from other farmers.	Obtained from dealers.	Produced on farm where used.	Obtained directly from other farmers.	Obtained from dealers.
	%	%	%	%	%	%	%	%	%
North Atlantic Division.									
Maine	19	0	81	0	0	100	34	8	58
Vermont	3	1	96	0	0	100	40	11	49
New Hampshire	2	2	96	0	0	100	17	11	72
Massachusetts	1	2	97	1	3	96	7	13	80
Connecticut	0	0	100	0	0	100	19	15	66
Rhode Island	0	0	100	0	0	100	25	8	67
New York	4	2	94	4	2	94	61	17	22
New Jersey	6	0	94	7	0	93	52	11	37
Pennsylvania	14	6	80	8	5	86	72	13	15
Middle Atlantic Division.									
Maryland	9	4	87	15	11	74	72	15	13
Delaware	0	0	100	32	16	52	79	15	6
Virginia	6	2	92	10	7	83	70	14	16
West Virginia	9	4	87	8	4	88	61	17	22
North Carolina	7	1	92	18	6	76	51	16	33
South Carolina	5	11	84	13	11	76	35	16	49
Southeastern Division.									
Tennessee	1	1	98	13	7	80	62	18	20
Georgia	6	1	93	3	2	95	47	18	35
Florida	21	6	73	16	0	84	12	7	81
Alabama	5	5	90	6	4	90	34	15	51
Mississippi	0	7	93	13	11	76	24	13	63
East Central Division.									
Michigan	15	4	81	26	10	64	72	15	13
Ohio	25	12	63	35	14	51	77	14	9
Indiana	14	8	78	43	18	39	78	15	7
Illinois	32	15	53	27	19	54	78	14	8
Kentucky	4	2	94	7	4	89	57	15	28
North Central Division.									
Wisconsin	20	16	64	25	16	59	81	12	7
Minnesota	34	21	45	20	17	63	81	13	6
North Dakota	14	14	72	8	12	80	82	13	5
South Dakota	17	16	67	20	22	58	84	13	3
West Central Division.									
Iowa	39	17	44	18	15	67	80	14	6
Missouri	19	12	69	21	18	61	69	21	10
Nebraska	18	9	73	28	28	44	77	15	8
Kansas	14	10	76	39	17	44	71	15	14
North Pacific Division									
Montana	6	6	88	12	19	69	71	17	12
Idaho	12	7	81	18	7	75	67	12	21
Washington	1	0	99	3	1	96	67	11	22
Oregon	1	1	98	16	8	76	63	15	22
South Pacific Division.									
California	2	2	96	10	11	79	56	19	25
Nevada	5	0	95	5	6	89	52	15	33
Arizona	0	5	95	17	22	61	50	17	33

MEADOW FESCUE SEED OUTLOOK.

The acreage of meadow fescue that will be cut for seed is expected to show a decrease of 20 to 50 per cent below that harvested last year. With a yield per acre estimated to be the same as, or only slightly better than, that of last year, it seems that the production of meadow fescue seed this season will be even less than the small production of last year. Harvesting of the crop has commenced but it is difficult to determine what the quality will be as a continuation of the recent rains may affect the color of the seed appreciably. Several offers of 15 cents per pound to growers for clean seed have been reported but it is thought by a few of the correspondents that the growers will not be willing to dispose of their crop at less than 20 cents a pound.

VEGETABLE SEED CROP CONDITIONS

California

Climatic conditions have favored the California growers during the past month, and judging from present indications many fields will yield a satisfactory harvest. Unusual irregularity is noted in the condition of all fields between the early and late planted crops. While some fields are looking better than last year at this time, others are not looking as well, and for this reason it will be difficult to estimate the general yield until later in the season. Taken as a whole, however, it is thought that the general yield per acre will be about equal to last year providing nothing deleterious intervenes between now and harvest. From present appearances the growers will receive more than they hoped for earlier in the season as all sections were subject to a number of adverse conditions that threatened a serious damage throughout the growing season. Among them were the excessive rains in February and the subsequent continued drouth, the unusual prevalence of aphis, onion mildew, and a few hot, dry winds in the Delta district during the first week in June. Although the favorable weather during June proved a lifesaver to the growers, the plants were not able to overcome all the damage they had sustained earlier in the season.

Radish.—Some fields of radish are now being harvested, and one grower estimates his yield at 1,000 pounds per acre. Aphis and drouth have done considerable damage to many fields, and it is thought that the average yield will fall below normal.

Onion.—The general condition of onion has improved during the last month, and a fair yield is now anticipated. The plants are in full bloom, and the black hulls on the seed are just beginning to appear. If the hot, dry winds hold off for another ten days the crop will be saved. Although the condition could not be considered normal, the growers hope to have enough seed to fill present contracts.

Parsnip.—There is every reason to believe that a good yield of parsnip will be harvested.

Garden Peas.—Practically all of the early-planted garden peas are now harvested and many fields are threshed. The yield is only fair owing to the wash-outs and damage caused by aphis. The drouth caused vines in the late-planted fields to mature early. The pods are not filling well, and the yield will be light.

Salsify.—The picking is now under way, and a good yield is reported. The acreage is somewhat greater than last year.

Spinach.—The spinach crop will be light. Conditions have not been favorable to this crop throughout the season, and the acreage is reduced. The fields were looking much better last year at this time. The proportion of the acreage of prickly-seeded spinach, compared with last year, has increased over the Bloomsdale variety. Many fields are now ready to be harvested.

Tomato.—The tomato plants are doing well although it is too early in the season to forecast the final results.

Beet.—The beet fields are extremely irregular, especially fields of table beet. This is partially explained by the early and late plantings under unfavorable conditions. This is now the critical period when they are subject to burn. It is certain that the average yield of table beet will fall below normal. The mangel and sugar beet fields are looking much more uniform than the table beet, and a normal yield of these is now anticipated. The acreage of mangel and sugar beet has increased in this State over last year.

Beans.—A fair stand of beans was obtained under adverse conditions, with a reduced acreage. The growers anticipate a light yield fearing there will not be enough moisture to sustain the plants during the growing season.

Carrot.—The early and late planted carrot fields show quite a marked irregularity, but the condition of all fields improved during the month of June and it is now thought that a satisfactory yield will be obtained.

Lettuce.—Minor losses occurred in the lettuce fields earlier in the season, but the remainder of the crop is now in good condition and the outlook is promising.

Celery.—The celery acreage is short this season, but the few fields that were planted are in excellent condition.

Leek.—As a rule, leek is a sure crop in California, and this season is proving no exception. A good stand was obtained, and a satisfactory yield is indicated.

Squash.—A good stand of squash was secured in spite of unfavorable conditions when the plants were small, and the fields are now doing well. The acreage of Hubbard squash will be limited owing to the shortage of stock seed at planting time.

North Pacific Division

Garden Peas.—Idaho contract growers of seed garden peas report that the crops have not made satisfactory progress since planting. The seeding season was very dry, and hot, desiccating winds prevailed the greater part of June. Efforts to irrigate up the peas were unsatisfactory. Supplies of irrigation water are extremely low. Already many fields are failures. The growers state that rain must be had early in July or the majority of the crops will be failures. Under desirable conditions between now and harvest it is estimated that not more than 25 per cent of a normal crop could be obtained.

Growers in eastern Washington report that the seed situation is not as favorable as earlier in the season. Heavy frosts and drouth during the first part of June did some injury to the early and medium seedings. There was a good rain on June 27, which, together with cool weather since that time, has improved the growing condition. At present the prospects for yields are thought to be equal to those of the same period last year. The pea crops in western Washington are making satisfactory progress. A rain is needed early in July to insure a normal yield of seed, although crops are not suffering. The peas in this district in 1918 were destroyed by the aphis.

The seed garden pea situation in Montana is somewhat similar to that existing in Idaho. The seeding season was very dry making it necessary to irrigate up many of the crops. This was not satisfactory. A drouth, which is prevailing in most of the producing districts of Montana, is blighting some of the early bloom. Supplies of irrigation water are very low. Growers estimate that yields will be 40 to 50 per cent of normal.

A small acreage of peas in western Oregon is making satisfactory progress, being in the early stages of bloom. Present growing conditions compare favorably with those of a normal year and are 100 per cent better than last year.

Beans.—Contract growers of dwarf snap beans in Idaho report that the crops have made satisfactory progress since planting. The stands are good, and very limited frost injury has been reported. It is too early to make predictions on the yield of this crop.

Cabbage.—The cabbage crop for seed in the Puget Sound region of Washington has made very satisfactory progress. The seed is now well formed and the crop is practically assured. Contract growers are very optimistic in their forecasts of production. It is estimated that this district will produce 1,000,000 pounds of seed this year. The seed will not be threshed quite as early as in normal years. A recent rain is reported to have reduced the yield slightly.

Turnip and Rutabaga.—The turnip seed crop is now being harvested. The yields are not as large as were anticipated earlier in the season. Contract growers report that all varieties, with a possible exception of Purple Top White Globe, probably will be short. A small surplus possibly will result locally from acreages of independent growers of which there are more than last year.

The rutabaga seed is developing quite satisfactorily and will be ready to harvest about the middle of July.

Beet.—The garden beet crop for seed has made satisfactory progress since being transplanted. The present growing condition compares favorably with that of the same time last year.

The mangel beet crop for seed is making fairly satisfactory progress. A full crop of seed is anticipated. The present growing condition is favorable.

The present growing condition of the sugar-beet crop for seed is only fair, being 50 to 60 per cent of that of a normal year. Hot prevailing winds and a shortage of irrigation water are responsible for this situation.

Spinach.—The spinach crop for seed has been making desired progress. Present growing conditions are much more favorable than for the same time last year.

Onion.—The onion crop for seed has made satisfactory progress up to this time. The present growing condition is 90 per cent of that of a normal year.

Other Sections

Garden Peas.—The Michigan seed garden pea crops made quite satisfactory progress early in the season, but prevailing hot, dry weather has done much injury. The acreage on high ground has been damaged to a greater extent than that on low ground. Present growing conditions indicate a light yield, estimated at 50 to 60 per cent of the 1918 yield.

The present growing condition of the Wisconsin acreage is reported as being fair, or 70 to 80 per cent, as compared with a normal year.

The seed pea acreage in New York State has not made satisfactory progress on account of dry weather. The present growing condition is reported to be about 25 per cent of normal.

Beans.—Contract growers in Colorado state that early plantings of dwarf snap and garden pole beans were killed by a heavy frost on June 2. The growth of later plantings has not been satisfactory, owing to drouth. By the various growers the present growing condition is considered as being 50 to 70 per cent of normal. Conditions do not compare favorably with last year.

In New York State, plantings were late on account of excessive moisture, but crops are now making better progress. The present growing condition compares favorably with the same period of a normal year and better than last year.

Michigan growers report that the beans are just above ground and at present are looking well. However, if the dry, hot weather continues, much injury will result.

Tomato.—The Michigan tomato seed crop has made satisfactory progress to date and is now looking very well. The present growing condition of the crop is good as compared with conditions existing at this time last year and from 80 to 90 per cent as compared with a normal year. The acreage is reported to be smaller than that of last year.

In Ohio the present growing condition is reported as good or possibly 75 to 85 per cent of normal.

The tomato seed crop in New Jersey is reported to be in good condition and making rapid growth. In some of the growing districts, however, the crop is late. Present growing conditions are considered good.

The planting of the Pennsylvania tomato seed crops was delayed on account of bad weather, but the plants have made good progress since setting out.

Pepper.—The New Jersey pepper seed crops have made good progress but some plantings will be a little late because of adverse weather conditions. The present growing condition is fair, or about 80 per cent of last year.

Radish.—The acreage for radish seed in Michigan is reported to have made quite satisfactory progress up to the latter part of June. Drouth since that time has done some injury to the growing crop. At present, growing conditions compare quite favorably with last year, but are only 70 to 75 per cent of a normal year.

Sweet Corn.—The Ohio plantings of sweet corn for seed were two weeks late because of excessive rains during the early spring. The stand is good and progress of the crop has been quite satisfactory.

Michigan growers of sweet corn state that the stand is only fair, because of cutworm injury and other factors. The present growing condition is reported to be 75 per cent of last year.

Connecticut growers report that sweet corn is making satisfactory growth under favorable prevailing weather conditions. The present growing condition is possibly 90 per cent as compared with last year. The crops are backward.

The sweet corn acreage in New York State is making satisfactory progress, although planting was delayed on account of excessive moisture. The present growing condition is reported to be equal to that of last year and somewhat better than a normal year.

Spinach.—Growers of spinach seed in New York State report that the crop was planted late and is not making the progress desired. The condition of the larger portion of the spinach seed crop is considered poor as compared with a normal year or last year.

Cabbage.—On the whole, the cabbage seed crop has made quite satisfactory progress in New York State. Growers report that the present growing condition is good. The growth has not been as heavy as last year. Considering the increased acreage and present conditions of the crop the outlook for seed is much more promising than last year.

Kale.—In New York State the kale seed crop has made satisfactory progress. The present growing condition is reported as very good, or about 100 per cent better than for the same period last year.

Garden Beet.—The garden beet seed crop in Connecticut has made satisfactory growth since transplanting. Reports on the present growing conditions vary. The condition of some of the fields compares favorably with conditions existing at this time last year, while others are only 75 to 80 per cent of last year.

English Turnip.—The turnip seed crops in most districts are now being harvested. The late wet spring in New York State followed by a dry spell is given as a cause for a reduction of the yield of seed which growers estimate to be 60 per cent normal.

All of the turnip seed, Seven-Top variety, in Tennessee, has been threshed and much of it recleaned, ready for shipment. The total production is reported to be about 200,000 pounds, country run, or 140,000 pounds recleaned seed. The quality of the seed is below normal because of continued rains during the harvest period and practically all of it is more or less discolored.

Muskmelon.—The planting of the muskmelon crop for seed in New Jersey was delayed by excessive moisture and the crops have not made good progress. It is estimated that the present growing condition is about 80 per cent of normal and 70 per cent of last year.

Colorado growers report that the seed crops were injured by frost. The present growing condition is considered to be fair as compared with the corresponding period of a normal year.

Squash and Pumpkin.—New Jersey growers of squash and pumpkin

seed state that the crops have made satisfactory progress since planting. The present growing condition is considered equal to that of a normal year. The growing condition in Nebraska is reported as being good. Other sections also report favorable growing conditions.

Michigan growers report that the squash and pumpkin seed crops have made satisfactory progress. The stands are good and growing conditions compare favorably with those of last year.

Cucumber.—The Colorado growers report that the cucumber crop for seed was injured by frost, which will lower the estimate on yields as much as 50 per cent in some cases. The present growing condition is reported as being good, or from 75 to 80 per cent of normal.

The Michigan cucumber crop is growing nicely. Present growing conditions compare favorably with conditions existing at this time last year.

Watermelon.—Florida growers report that the watermelon seed crop has not made satisfactory progress since planting as a result of the heavy May rains and a subsequent lack of moisture in June. The present crop condition is estimated to be 75 per cent of last year, and 60 to 75 per cent of normal.

ONION SETS

Chicago.—The acreage put out for onion set production this year in the South Side district is probably a little larger than for last year. The early-sown beds have developed well. The sets are all bulbing at this time but the early sets show a much larger growth of top and with favorable weather conditions should develop from now on much better than the late-sown fields.

Sets in the late-sown fields have a much smaller top and they need rain at this time. Fields are very uneven because weather conditions at planting were not satisfactory. Some fields sown in sandy soil started immediately and are in good shape, while other fields with clay soil formed a crust so that the onions could not come through. The best fields were sown about the middle of April, while other fields sown later that secured rain at the proper time are also good. It is thought that the yield in this section will average at least five bushels per pound of seed sown.

In the South Holland district maggots caused a great deal of trouble early in the season, but they have entirely disappeared. Harvesting will start the last of July, and on some of the earlier varieties, such as white pearl, it will start about July 20. Many of the larger growers have fields from which they expect to receive from 8 to 10 bushels per pound of seed sown.

Heavy rains three weeks ago flooded a good many of the fields, but the damage in most cases was very slight. Growers in new territory that has not been growing onion sets complain that the weeds caused them more trouble this year than ever before.

Reports indicate that the acreage on the North Side is somewhat less than last year, as the large contract growers have not put out as much seed as formerly and less seed was sown for sets by independent growers.

The early-sown sets are in a much better condition than those which were sown later, while some of the sets that were in low places were flooded with water. The late-sown sets have small tops and do not seem to have developed much growth up to the present time. The appearance of lice three weeks earlier than common which attacked the tops and retarded the growth of the onion sets, together with the damage caused by smut, maggots, and the hot, dry weather will curtail the crop.

It is estimated that the yield on the North Side will not average more than four bushels per pound of seed sown. As a rule sets grown on the North Side out-yield sets grown on the South Side but this year conditions are reversed. It is thought that the North Side will have between 50 and 60 per cent of a normal crop. Much depends upon weather conditions during this month as to just what the final results will be.

It appears that the large dealers or commercial growers have contracted for nearly their normal acreage of sets, but have been disappointed in the contracts which they have been able to place with the trade, as it seems that there are fewer sets contracted for delivery to the trade at this time than for a number of years. The dealers made contracts with the growers on the basis of 1918 figures and it looks to them now as if they would have to sell the sets grown this year practically at cost. The trade is slow to take hold of sets because this commodity was such a drug on the market this spring. They figure that they will be able to buy them at their own price later on and are not anxious to buy for future delivery.

Louisville, Ky.—The acreage in the Louisville district apparently is slightly larger than that of last year. Prospects for a crop are good at this time, although one week ago they needed rain very badly. A rain was received in time to place the crop in good condition. Before this rain the tops were small with hardly any bulb growth. The rains which have been received lately will no doubt improve the condition very materially, but for the crop to develop properly there must be good growing weather with more moisture during July.

CRIMSON CLOVER SEED CROP—1919.

The quantity of American-grown crimson clover seed of 1919 harvest, that will enter commercial channels is estimated by shippers in producing sections to be about 2,250,000 pounds. This is about equal to the commercial production of 1918.

A much larger acreage than normal has been harvested this season but the yield per acre was much lower, averaging about 4 bushels per acre compared with 7 bushels per acre last year. The cause of this low yield was the unfavorable weather conditions during the month of May. A frost the last week of April when the clover was beginning to bloom did considerable damage. During the month of May there was too much rain. This was true also during harvest time and much seed was lost in the fields after being cut.

The quality of the seed is fair. The seed is small and somewhat discolored and contains more immature seed than normally. This immature seed blows out in recleaning and the recleaned seed shows up fairly well, but the dockage is heavy.

It is estimated that one-fourth to one-half of the crop has been hulled, the rest having been hauled to the barns to be hulled later—about July 15. Practically all of the seed that has been hulled is still in growers' hands. Some dealers report that they are willing to pay $16.00 to $17.50 per 100 pounds, country run, for enough seed to meet their trade requirements, but have not been able to buy at that price. Growers are asking $20.00 to $21.00 per 100 pounds f. o. b. shipping points for grade 1 seed. No sales are being made at this price. Reports would indicate, however, that farmers in some consuming sections are willing to pay this price and there is some indication that an effort is being made on the part of some growers to market their supply cooperatively. In view of the stand taken by the growers, most dealers appear to be willing to stay out of the market at present and risk buying at the last moment.

Some imported seed is being quoted to dealers at interior points at $14.00 to $15.00 per 100 pounds f. o. b. New York. The import situation appears to be the most uncertain factor in the crimson clover seed market and dealers and farmers probably will not agree on a price for the new-crop domestic seed until it is more definitely known how much imported seed will reach this country in time for early fall sowing.

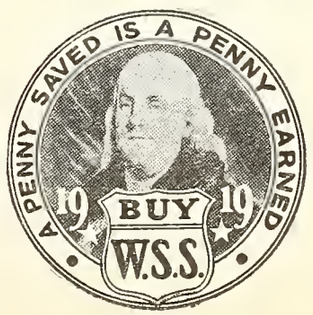
The imports of crimson clover seed for the month of June were 800,900 pounds compared with 40,000 pounds for the same month a year ago. The total quantity imported during the 6 months ending June 30, 1919, was 1,175,400 compared with 492,500 pounds for the same period in 1918.

There was 1,066,575 pounds of crimson clover seed in dealers' hands January 1, 1919. This carry-over together with the imports of 1,175,400 pounds for 6 months ending June 30, 1919, and the estimated commercial production for this year of 2,250,000 pounds give a total available supply at this time of approximately 4,500,000 pounds, less the quantity that was sold for spring planting in 1919. This is about 200,000 pounds greater than the total available supply at this time in 1918 based on similar figures for that year.

There still remains the month of July, and probably August, during which imported crimson clover seed may be received in this country in time for the fall planting, but it is not known what quantity will be imported during these months.

INDEX TO VOLUMES 1 AND 2 AND BACK COPIES OF THE SEED REPORTER MAY BE OBTAINED.

An index to volume 1 (Nov. 1917-June 1918) and volume 2 (July 1918-June 1919) of the Seed Reporter has been prepared and is being printed for the use of those who wish to preserve a file of the Seed Reporter for reference. A copy of this index and also back numbers of the Seed Reporter, as long as the supply lasts, will be furnished to those who have use for them, upon request to the Seed Reporting Service, Bureau of Markets, Washington, D. C.



To Meet a Rainy
Day and Enjoy
a Sunny Opportunity.

KENTUCKY BLUEGRASS SEED CROP—1919.

A somewhat larger production of Kentucky bluegrass seed than last year in Kentucky and a considerably larger production in Missouri and Iowa is reported by numerous correspondents in the seed-producing sections of these States. The summaries of the reports received, together with some statistics that were published in part in the issue of the Seed Reporter for November, 1917, are given below:

Kentucky.—The acreage of Kentucky bluegrass seed that was stripped this season in Kentucky beginning June 5 and ending about June 20, was about 95 per cent of the acreage stripped last year. The yield per acre this season, however, is estimated to have been 10 to 20 per cent more than that of last year, hence the reduced acreage this year is more than offset by the increased yield per acre, resulting in a production this season of approximately 400,000 bushels of stripped seed as compared with an estimated production last season of 350,000 bushels. The estimated production of stripped seed, prices paid to growers, and cleaners' carload selling prices for the past 20 years are given in the following table.

Production and Prices of Kentucky Bluegrass Seed in Kentucky

Year.	Production of stripped seed. Bushels.	Prices paid growers for stripped seed. Per bushel.	Cleaners' selling prices in carload lots. Per bushel.	
1900	500,000	$0.42– .45	$0.85 –1.00	
1901	400,000	.50	.80 – .85	
1902	275,000	.72	1.10 –1.15	
1903	340,000	.65	1.18 –1.20	for 19 lb. seed
1904	750,000	.42– .45	.65 – .85	
1905	275,000	.70– .85	1.25 –1.30	
1906	350,000	.70– .85	1.65 –1.85	
1907	425,000	.80–1.25	2.00 –2.25	
1908	600,000	.60– .62½	1.13½	
1909	450,000	.80–1.00	1.68 –1.82	for 21 lb. seed
1910	200,000	1.25–1.60	2.65 –2.90	
1911	350,000	1.65–1.75	2.35 –3.20	for 19 lb. seed
1912	1,500,000	.55– .70	.95 –1.15	
1913	175,000	.60	.90	
1914	700,000	.45	.90	
1915	350,000	.60	1.50	
1916	250,000	.70	1.25	for 21 lb. seed
1917	200,000	1.40–1.65	2.75	
1918	350,000	1.50	2.85	
1919	400,000	...	...	

The quality of the 1919 crop of Kentucky bluegrass seed is somewhat variable, but in general the color is good and the seed is comparatively clean but of light-weight, though some of it is reported to be of good weight. Cleaners recognize that within recent years there has been a tendency on the part of the trade to demand heavier seed together with higher purity and germination.

The prices paid for uncured seed from the stripper this season ran from 80 cents to $1 per bushel, while cured seed for August delivery was contracted for in some cases at $1.50 per bushel. Two or three correspondents report that $1.75 per bushel was the contract price. Most of the reports tend to show that the growers have sold very little of their seed and that the cleaners are not making any offers at the present time (July 1), doubtless because of the fairly good crop in Kentucky and the good crop in Missouri, together with the uncertainty of the foreign demand. There seems to be more of an inclination than usual on the part of the growers to pool their seed this year. Many growers have indicated that they expect $2 to $2.50 per bushel because stocks in dealers' hands are thought to be considerably below normal.

Missouri and Iowa.—Stripping of what is believed to be the largest crop of Kentucky bluegrass seed in Missouri and Iowa since 1912 probably will be completed by July 5. Last year's crop probably was the smallest since 1912, hence it was difficult for correspondents to compare on a percentage basis this year's crop with that of last year. Though the acreage harvested this year probably was somewhat below normal, the yield per acre is thought to have been about one-third above normal. The production this year, therefore, is greater than normal and various estimates range from 275,000 to 350,000 bushels. The weather the past spring has been very favorable for the development of the seed. This, together with the fact that the weather has been good during harvest, has resulted in providing for a crop of excellent quality. Some difficulty was experienced in certain sections in obtaining a sufficient number of teams and enough help to harvest the crop but it is thought that little seed remained unstripped for those reasons.

A number of growers have disposed of a part or all of their crop at 40 to 70 cents per bushel for rough-stripped seed and $1 to $1.50 for cured-stripped seed. A few growers were reported to have sold stripped seed at as low as 30 cents and a few at as high as $2 per bushel, depending upon the quality of the seed and the stripping conditions. The jobbers operating in the Missouri and Iowa producing sections have been active in buying the seed but growers have not been inclined to dispose of their crop freely.

BIDS REQUESTED FOR CONGRESSIONAL SEED DISTRIBUTION

R. A. Oakley, Bureau of Plant Industry.

Under date of June 28, 1918, the Department of Agriculture, through the Office of Seed Distribution, requested quotations on furnishing for **immediate delivery out of stocks on hand** standard varieties of the seeds listed below in quantities approximately as follows:

VEGETABLE SEED	Bushels
*Corn, Sweet	4,000
Beans, Dwarf (hand-picked)	2,000
Beans, Pole (hand-picked)	2,000
Beans, Lima (hand-picked)	2,000
Peas (hand-picked)	4,000
	Pounds
Beet	70,000
Cabbage	5,000
Carrot	20,000
Collards	3,000
Cucumber	30,000
Endive	5,000
Kale	3,000
Lettuce	60,000
Muskmelon	5,000
Okra	4,000
Onion	40,000
†Parsnip, Crop of 1919	8,000
Parsley	5,000
Radish	75,000
Squash, Summer	10,000
Tomato	20,000
Turnip	30,000
Watermelon	10,000

*State whether hand-picked or milled.
†Delivery: Sept. 1, 1919.

FLOWER SEED	Pounds.
Aster, named varieties	400
Antirrhinum	300
Balsam, Camelia Flowering	500
Calendula officinalis	1,000
Candytuft, Empress	1,000
Centaurea cyanus (Bachelor's Button)	800
Chrysanthemum, Annual Mixed.	400
Coreopsis bicolor or similar sorts	900
Cosmos, Early Flowering	1,000
Delphinium, Annual	400
Dianthus Heddewigii, Single	800
Dianthus Chinensis, Double	800
Hollyhock, Annual Mixed	500
Eschscholtzia californica	1,500
Morning Glory, Dwarf	1,000
Morning Glory, Tall	2,000
Mignonette, Large Flowering	1,500
Nasturtium, Dwarf, Choice Mixed	1,000
Nasturtium, Tall, Choice Mixed	1,000
Petunia, Countess of Ellsmere or similar types	200
Poppy, Paeony Flowering	1,000
Poppy, Shirley	1,000
Portulaca, Mixed	200
Sweet Alyssum	800
Sweet Peas, Choice Mixed	5,000
Zinnia, Giant Flowering, Double Mixed	500
Zinnia, Dwarf, Double Mixed	500

Bids should be for a definite amount, but need not be limited to the exact quantities listed herein, as it may be necessary because of seed shortages to increase certain items and decrease others.

Offers will be considered of any standard variety or kind in quantities of not less than 500 pounds or 100 bushels of vegetable, and 100 pounds of flower seeds.

The locality where grown and the year when grown must be stated, and the Department reserves the right to reject any and all bids where this is not done.

The Department reserves the right to reject any seed which on delivery is not of satisfactory viability, purity and sample.

No special form of bid is required, and blank forms are not furnished by the Department. It is requested that your bid be submitted in the form of a letter referring by date to this inquiry, stating clearly the conditions under which the offer is made, and listing by varieties the kinds and quantities of each sort you can furnish, and the price per pound or bushel. Quotations stating varieties or specifying varieties making up a mixture will be given preference over "mixed" lots.

In mailing your quotations, kindly use the envelope furnished by the Department, which states the date and hour of opening the bids.

No samples should be sent in with the quotations. After the awards have been made, the successful bidders will be required to submit samples representing these stocks at the time the orders are placed.

Quotations should reach the Department on or before 2 P. M., Tuesday, July 22, 1919. Upon this date all bids will be opened by the Department Board of Awards, and members of the seed trade are cordially invited to be present either in person or by representatives. The prices on the various items will be read aloud by the Chairman of the Board, but the quantities quoted upon, and other information submitted by the bidders, will be treated as confidential matter. After the awards have been made, orders will be placed with the successful bidders by telegram, which will be followed by a letter stating the conditions under which the order is placed and also giving reasons why any other items quoted on were not accepted by the Department.

All unsuccessful bidders will be advised by letter why their bids on each item were not accepted; from whom these items were purchased and the prices paid.

The Department reserves the right to reject all bids in whole or in part.